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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/708,072

02/06/2004

John Ginder

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BROOKS KUSHMAN P.C./FGTL
1000 TOWN CENTER
22ND FLOOR
SOUTHFIELD, MI 48075-1238

EXAMINER

PADGETT, MARIANNE L

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/708,072

Applicant(s)

GINDER ET AL.

Examiner

Marianne L. Padgett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/6/2004, 3/22/2004 & 3/16/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 11,20 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-19, 21-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/22/4, 2/6/4.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

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1. Applicant's election without traverse of group 1 method claims 1-10, 12-19 & 21-26 in the reply filed on 3/16/2006 is acknowledged.
2. Applicant's IDS's of 3/22/2004 & 2/6/2004 are made of record, however it is noted that on the former PTO-1449 the Japanese patent document, JP 4229602, cannot be considered because no such patent document was supply I'd, however there was an English abstract without the actual patent document found in the scanned file, which has been considered & listed on the PTO-892.
3. Claims 1-10, 12-19 & 21-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the part a) limitation of "kinetically spraying... to form permanent magnetic elements..." would imply that the magnetism of the elements is made permanent during the kinetic spraying deposition, however in limitation "b.) introducing persistent magnetization into the magnetic elements through application of concentrated magnetic fields... in the deposited material" (emphasis added) does not say when the magnetic fields are applied, but is inclusive of after deposition, which would appear to be potentially contradictory, given that the "permanent" of limitation a) would appear to have the same meaning as the "persistent magnetization" of limitation b). Also note in (b), that "the deposited material" is not a previously used term, nor is "material" used to refer to anything that's deposited, hence this term lacks proper antecedent basis, but appears to imply that the magnetic fields are being applied after the kinetic spraying operation is completed. These problems are also present in the language of independent claims 12 & 21.

Also, in all three independent claims 1, 12 & 21, what is intended by the relative position of the first in second substrates described as being "adjacent" is of unclear scope, i.e. how are they adjacent? In claims 1 & 21, as written, they are required to be adjacent during the formation process of the planarized coils. Adjacent, as used in the specification from language of [0060] end of paragraph & illustration of

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figure 5, would appear to be the first & second substrates with their respective magnetic elements & planarized coils formed thereon oriented with the deposited surfaces facing each other, but the claims are not limited to any such configuration as adjacent encompasses location placed in proximity to any part of the substrate sides, back, front, what have you, a respective of the components formed thereon, where "adjacent" is also a relative term lacking clear meets and bounds as to how close or far the substrates must be to be considered adjacent. Note that while claim 12 is merely "placing one or more coils adjacent to the first substrate" at any time in the existence of the first substrate, where the coils can be coils of anything, unlimited, they could become placed in the relationship as shown in figure 5 after the formation of both components. On the other hand, claims 1 & 21 where the location is claimed for during the formation process of the planarized coil, it is unclear how a configuration as shown in figure 5 would allow one to deposit a planar coil on the substrate that would be so highly obscured from the spraying mechanism. The examiner suspects that the forming steps & and placement of that use substrates to be "adjacent", are actually two separate actions, i.e. the formation of the individual components comes first, with assembly of those components, which is what the examiner suspects is represented by figure 5, logically coming after the formation of the individual components, BUT that is not what is claimed.

Applicants might consider correction of a number of the above-discussed problems by careful use of temporal language to show order of steps and/or when particular effects are produced. Applicant is reminded to show support in the original specification for amendments to affect the content/meaning of the claims.

As independent claim 12 claims the alternatives of "soft magnetic or non-magnetic matrix" to be admixed with the permanent magnet powder, claims 16-18 are unclear, because while they further describe one of the options, they do not positively claim that one of those options was selected, thus it is unclear as written whether the option that is not further discussed, also reads on these dependent claims. Technically, it may be considered to do so, but it is unlikely that that was applicant's intent. Also note

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that as "soft magnetic" is a term that in the magnetic field is associated with the magnetic properties of a material, that one would not expect it to also modify "non-magnetic", however claim 17 makes this interpretation ambiguous, plus it makes the intended meaning of "soft" ambiguous, since if soft is modifying non-magnetic, it's not being used with its meaning in the magnetic arts, thus is an undefined relative term.

4. Claims 1-10, 15 & 21-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

While it would be obvious to one of ordinary skill in the art how one would kinetically spray a first substrate with permanent magnet elements & a second substrate with planarized coil elements, when they are adjacent on an assembly-line conveyor, such that they go successfully passed a spraying unit, there is no teaching of such a configuration in the specification (& would be extraordinarily inefficient to alternate deposition materials, etc.). On the other hand, how one would kinetically spray using an apparatus as shown in figure 1, to deposit a coil on a substrate that is NOT in line-of-sight as suggested by the claim language & figure 5, is not clear from the specification, hence can be considered to lack enablement.

Claims for, 15 & 24 claim "the permanent magnetic powder" to be selected from powder that may be "iron, nickel, cobalt", however paragraph [0051] discloses these materials as "suitable ferro-magnetic binder" to be used in a sprayed admixture with the permanent magnet powder, which is disclosed the neodymium-iron-boron or AlNiCo or Sm-Co₅, where it is noted that the claimed "samarium iron nickel" does not appear to be mentioned in the body of the specification. Iron is also disclosed in paragraphs [0047] & [0052] as "soft magnet" material. From these disclosures, there does not appear to be support in the body of the original specification or enablement for using iron or nickel or cobalt as the

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permanent magnetic powder in combination with some other (soft magnetic) binder material, as is claimed.

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 12-15, (16-18) & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gambino et al (6,773,765,B1), view of Alkhimov et al (5,302,414) or Van Steenkiste et al (6,139,913), and further in view of Wehde (3,739,248), or Porrazzo et al (6,137,891), and/or admitted prior art.

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Note that claims 16-18 are included in parentheses above, because the limitations of these claims have not been positively chosen, hence technically the option of nonmagnetic matrix material which is inclusive of plastics still can be considered to read on these claims.

In Gambino et al, see the abstract; Fig 1-2; col. 1, lines 10-30; summary; col. 3, lines 8-30⁺; col. 4, lines 25-58; col. 5, lines 37-68⁺; col. 6, line 50-col. 7, line 47. Gambino et al, thermal sprays claimed magnetic particles in resin binder materials, such that the resin is softened or melted and not the magnetic particles, and employs magnetic fields to orient the particles before the resin hardens, but there is no suggestion that metals could alternately be used as the binder therein. Note that all of these claims only require a “ductile, soft magnetic or non-magnetic matrix” equivalent of a binder material with the above ambiguity in claims 16-18, which is a description of use and physical characteristic, but does not limit composition, and plastic is a synonymous of “ductile”, hence the flexible resin materials used as binders in Gambino et al, are considered to read on the broad limitations of there claims, but not the specific metal or magnetic particle binder material of dependent claims not listed above. Furthermore, applicant specification in paragraph [0050] explicitly includes use of polymeric materials.

Gambino et al differs form applicants' claims by employing thermal spraying rather than “kinetically spraying”, however Alkhimov et al (abstract; col. 1, lines 5-20⁺; col. 2, lines 48-62; col. 3, lines 53-col. 4, line 20; col. 9, lines 13-22; and col. 15, line 38 -col. 16, line 9, esp. 3) or Van Steenkiste et al (913) (abstract; Fig 2; col. 1, lines 5-30 & 50-55; col. 2, lines 49-57; col. 3, lines 1-5 & 59-67; col. 4, lines 18-23 & col. 5, line 60-col. 6, line 10), teach kinetic spraying with the suggestion of use for applying mixtures of particles including magnetic, where kinetic spraying is advantageous over thermal spray type techniques, because of the ability to produce desirable adhesion at lower temperatures that preserve important properties of coating materials, thus one of ordinary skill would have been motivated to employ such a spray coating technique in the process of Gambino et al, as it would have been advantageous and

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consistent with the primary references teachings on keeping the temperature below those that will melt the magnetic particles, and would prevent damage to their magnetic properties.

Van Steenkiste et al (6,139,913) has generic teaching on kinetic spraying that are refinements of those of Alkhimov et al (5,304,414), with further teachings on spray coating mixtures of particles, but while neither of these references more than generally suggest use of magnetic particles in their spray technique, as discussed above Gambino et al. was seen to show use of such particles in a thermal spraying technique that kinetic spray was recommended to replace.

While Gambino et al. do not specifically teach substrates or carriers made of soft magnetic materials, such as iron, nor delineate usage in a configuration that includes a coil such that it is adapted to "develop an electric voltage..." or to create a motor, it would be obvious to one of ordinary skill in the art, that the various useful applications listed in Gambino et al. would have been expected to be inclusive of those that would employ Fe, and the specific example employing a Teflon coated pan as an exemplary carrier in the coating/formation process, would have typically been expected to have been either an aluminum or steel base material on which the Teflon was deposited, the showing the suitability of deposition on substrates of such compositions. With respect to coils on components as claimed, again note above cited uses, specifically in generators, motors & solenoids (which are electrically conductive coils of wire), such that it would have been obvious to one of ordinary skill in the art to construct conventional multi-part generators or motors which may employ solenoids, i.e. coils, using spray technique of Gambino et al. as suggested and thus producing products which read on these more specific claimed products. Applicants' background discussion in paragraph [0006] of the specification is supportive of these types of structures being conventionally known, and paragraph [0060] explicitly states that such configurations are "well-known in the art".

Alternately, Wehde teaches electrical motor structures that use windings (i.e. coils) and permanent magnets associated in configurations that appear to be as claimed (abstract; figures, especially

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1 & 3; col. 2, line 44-col., line 61+), where it is noted that the magnetic material may be applied by spraying granular permanent magnet material mixed in a binder onto the stator. Similarly, Porrazzo et al (6,137,891) teach making transducers for diaphragms with magnets that may be sprayed on an insulating layer used to create magnetic fields aligned to effect coils that are electrical conductor layers, which may also contain magnet material on a separate electrically insulating sheet (abstract; figures such as 1; col. 2, lines 1-9; col. 3, lines 5-43; col. 6, lines 10- 44, especially 15-20). As Gambino et al. is teaching use of their spraying technique for making generators, motors, loudspeakers, etc., it would have been obvious to one of ordinary skill in the art to apply techniques as taught in Gambino et al as modified as discussed above by the teachings of Van Steenkiste et al (913) or Alkhimov et al, in the production of motors or loudspeakers of constructions as disclosed by Wehde or Porrazzo et al, respectively, as they recommend creating their magnetic layers via spray techniques consistent with those of Gambino et al., hence would have been expected to effectively create the products of the tertiary references, which would thus read on the claimed process of producing these products.

7. Claims 1-5, 7-8, 12-16, 19, 21-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 5-6, 8-9 & 11-15 of U.S. Patent No. 6,773,763. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the patent (763) encompass overlapping sets of limitations that are claimed in different orders and varying semantics, noting that the independent claims detail the requirements of the kinetic spraying process & claim 14 explicitly uses the term; claims 12-15 are directed to specifically electric machines that may be motors or generators or require the formation of a coil; and claims 2-3 & 8-9 are directed to claimed deposition materials, thus one of ordinary skill in the art would find that the claims in the present application represent obvious variations of the claims of the (763) patent. It is further noted that the metals (Cu, Al, Ag & Au) claimed in application claims 7 & 26 for the coils, are those conventionally used for electrically conductive wiring, and as such would have

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been expected or typical metals to be employed for the coils, which would have been required to be electrically conductive for the functions claimed, thus obvious to one of ordinary skill in the art to employ for the claimed purpose.

8. Claims 1-10, 12-19 & 21-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-6, 8, 10 & 12-13 of U.S. Patent No. 6,592,935 in view of Wehde (3,739,248), or Porrazzo et al (6,137,891), and/or admitted prior art, as discussed above in section 6.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the kinetically spraying technique for producing the permanent magnets are of overlapping scope with limitations therefore claimed in different orders representing obvious variations of the process. The (935) patent further differs by not requiring the permanent magnet to be used in forming an electric machine, such as motor, but as delineated above this would have been an obvious use in view of admitted prior art or Wehde or Porrazzo et al, where it is especially noted that given the admissions in the specification of known construction of motors and given the suggestion in Wehde or Porrazzo et al of spray deposition of such structures, to employ the (935) patent's deposition process in making these known structures.

9. Claims 1-10, 12-19 & 21-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 47, 51-56, 58 & 61-67 of copending Application No. 10/463,747 in view of Wehde (3,739,248), or Porrazzo et al (6,137,891), and/or admitted prior art, as discussed above in sections 6 & 8.

This is a provisional obviousness-type double patenting rejection, although as a notice of allowance has been issued in this application, is expected to shortly become nonprofessional.

10. Claims 1-5, 7-10, 12-15, (16-18), 19 & 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alkhimov et al (5,302,414) or Van Steenkiste et al (6,139,913), and in view of

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Wehde (3,739,248), or Porrazzo et al (6,137,891), and/or admitted prior art, and further in view of Gambino et al (6,773,765,B1), where the references are discussed above in section 6.

This rejection is applied considering the interpretation that the soft magnetic binder material may be identical to the permanent magnet powder, as indicated, for example by claims 4 and 5, where both materials may be iron, or both materials may be nickel, or both materials may be cobalt, or alloys thereof.

Furthermore, it is noted that in Porrazzo et al. in the column 9, lines 30-42 teaching that discloses magnetic material sprayed on to form magnetized layer in the construction of the electromagnetic transducer, which is a electric machine, materials for the preferred embodiment are taught to comprise one the of nickel or neodymium or a composite thereof. Therefore considering the teachings of Porrazzo et al., it would offend further obvious to one of ordinary skill in the art to use an admixture of nickel plus neodymium, with the of the specific spray technique of kinetic spraying, which has been shown to be superior to other forms of thermal spraying as discussed above, in order to produce devices as taught in Porrazzo et al. note that this combination of Ni + Nd may be considered to read on applicants' specific binder claim plus generic permanent magnet powder.

As Wehde or Porrazzo et al require the creation of permanent magnets via a spraying deposition technique, it would've been obvious to one of ordinary skill in the art to apply magnetic fields as was shown to be known in Gambino et al. during spraying in order to ensure proper magnetic orientation for the devices components being formed.

11. Other art of interest include Van Steenkiste (2004/0142198 A1) and Pinkerton et al (6,465,039 B1), who kinetic spray magnetic particles of interest in binder material as claimed, but are not prior art. Nehl et al. (2004/0187606 A1) teaches kinetically spraying magnetic material inclusive of iron, iron alloys, rare earth composites, nickel & magnetic particles such as AlNiCo₅, for making a torque sensing apparatus ([0029], claims 22-25) the, that can be considered an electric machine, but is not prior art.

Hamano et al (6,494,968 B1) has some analogous teachings overlapping with Gambino et al, but again teaches resin binders (col. 6), and appears to use spraying to make the particles, not deposit them with their bond material (resin).

Kawado et al (5,391,403) teach thermal spraying of magnetic iron oxide particles (Fe_3O_4) in metal binders, such as Co, Ni or Fe to make magnetic films for sensors for shafts, with teaching on exposure to strong magnetic fields, but none of the magnetic particles used by Kawado et al overlap with those use by Gambino et al or Hamano et al, nor with those claimed by applicant. The flexible magnetic films made by Gambino et al are divergent end uses, and while Hamano et al's discussion of bonded magnets for electrical appliances and automobile parts is similar to Kawado et al, there are no suggested oxide particles for any magnetic particles, hence no reason to motivate use of Kawado et al's metal binders in Gambino et al or Hamano et al, nor to employ Gambino et al and to lesser extant Hamano et al's magnetic particles in the Kawado et al spray process.

Agarwala et al (4,990,876) teach plasma sprayed rare earth magnetic particles, such as NdFeB on to plasma sprayed metal bond layers, but not applying them as a mixture. The Japanese Iskii et al (JP 3-259562 A), or USPN to Tsutai et al (5,549,766) or Sakurada et al (5,456,769) make magnetic powders of interest using spray techniques, and may orient with magnetic fields during processing, with binder materials, but the final products are molded, not sprayed.

Other art of interest for products made with magnetic powder also includes Takaya et al (2002/0039667 A1) with discussions of composite magnetic materials in motors, in transformers, in choke coils, etc.

Stark (2005/0275079 A1) is of interest for teaching metallization via the option of "cold-gas dynamic spray" where the spraying it involves powdered metals, alloys, or mixtures of metal and alloys ([0096]), and refers to Alkhimov et al. (414) for details.

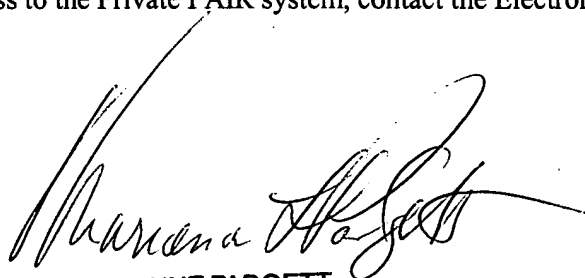
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12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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5/8-12/2006



MARIANNE PADGETT
PRIMARY EXAMINER